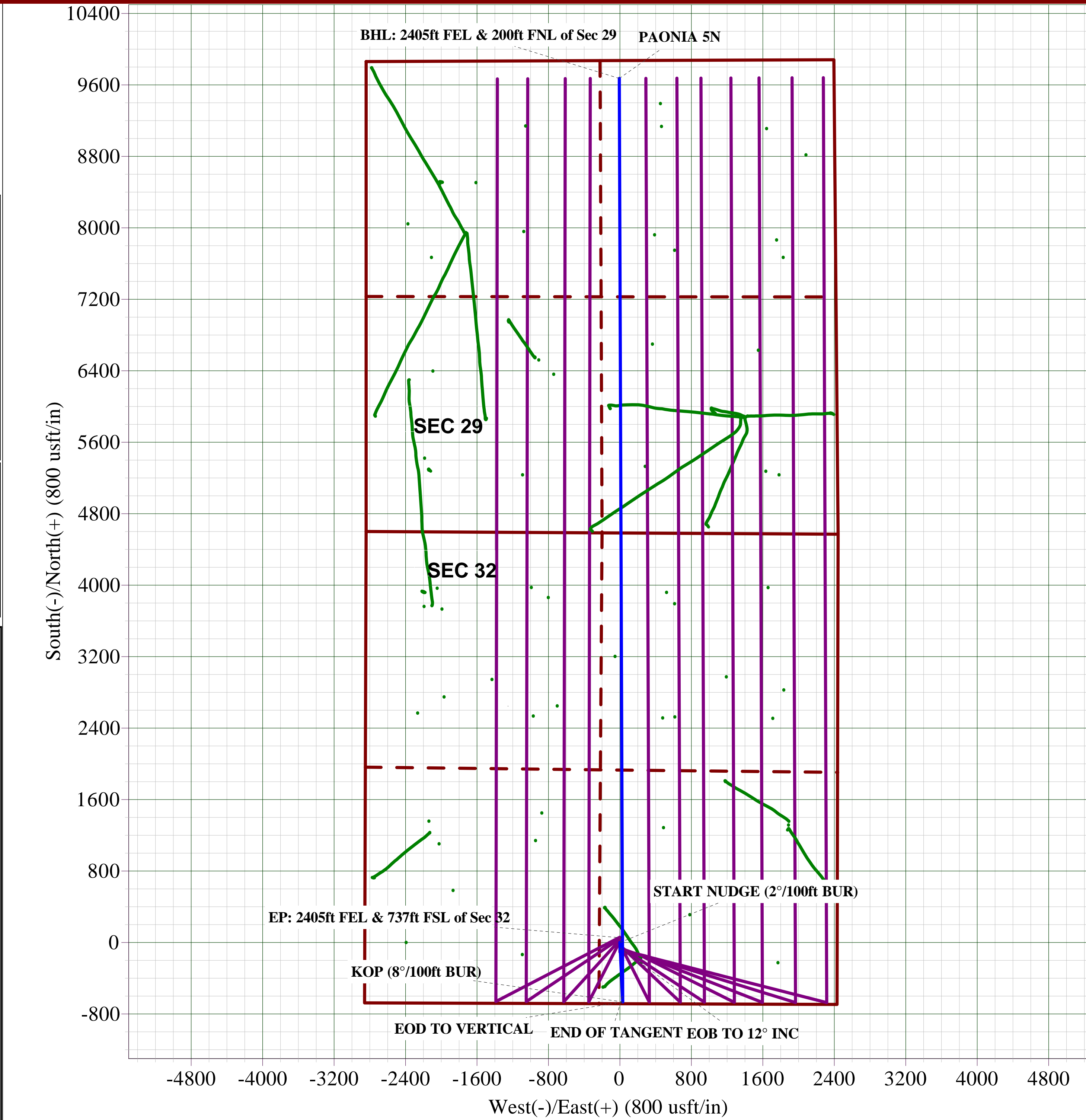
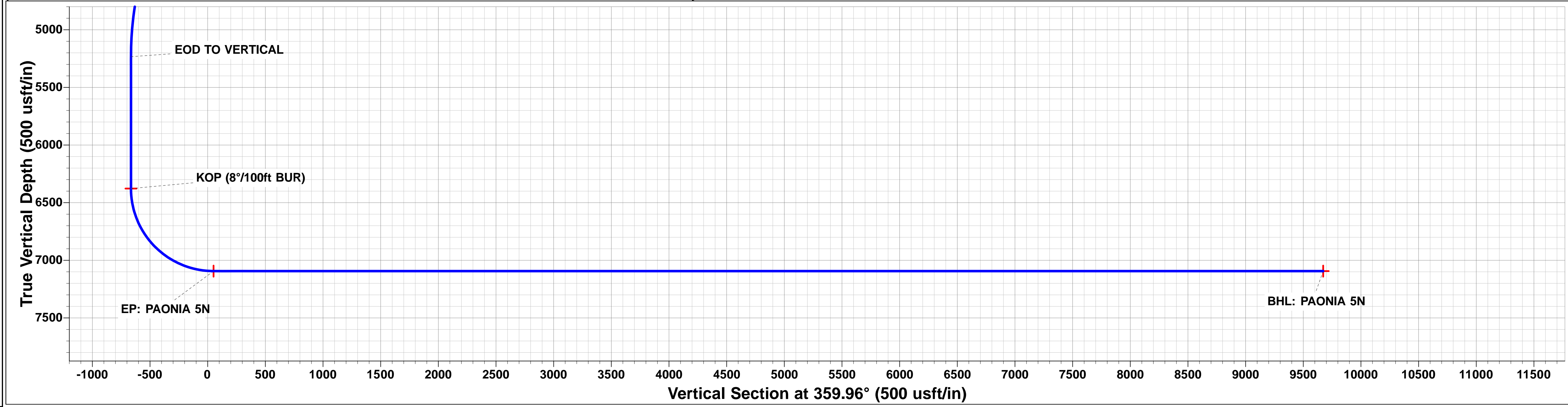
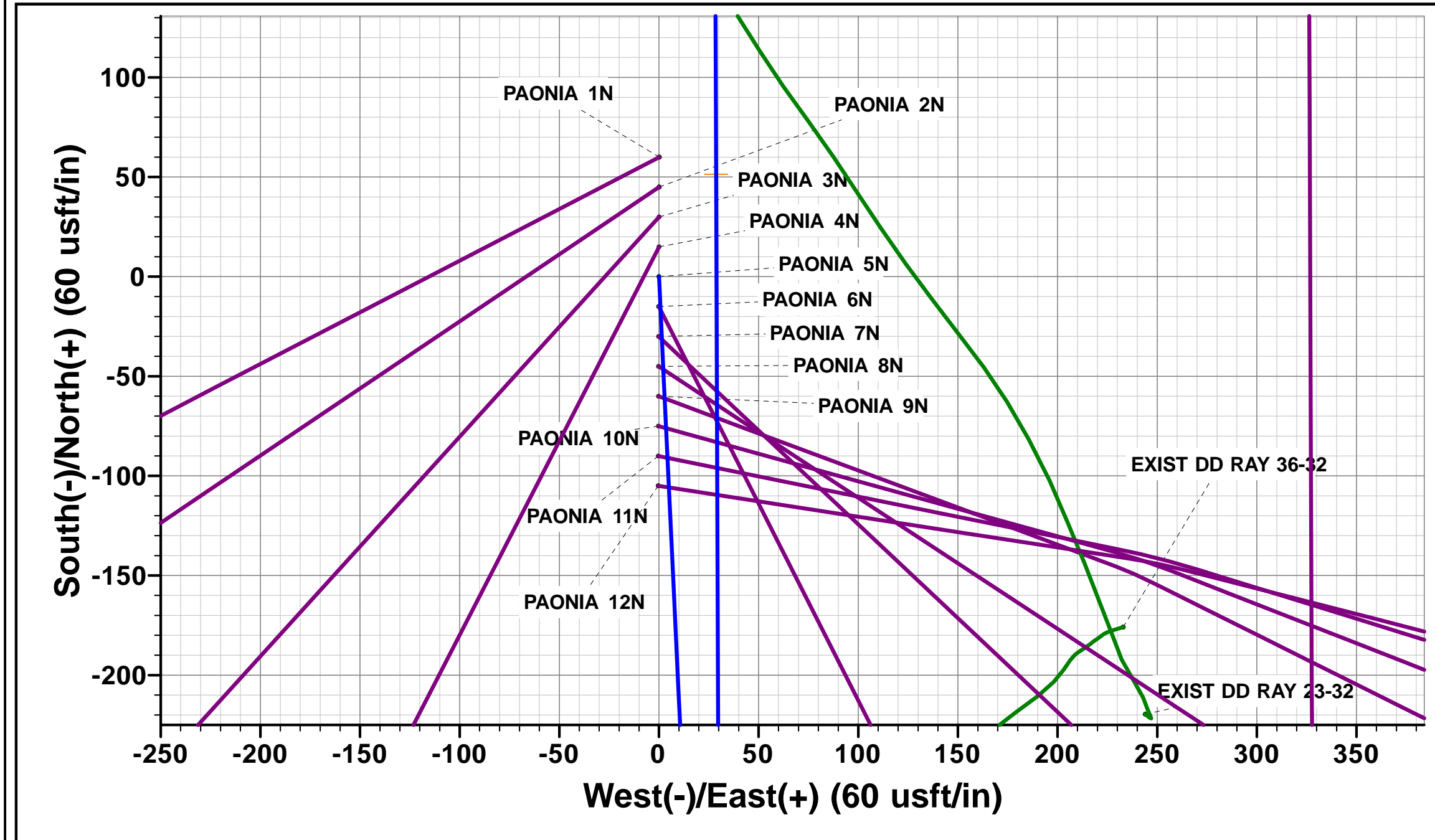
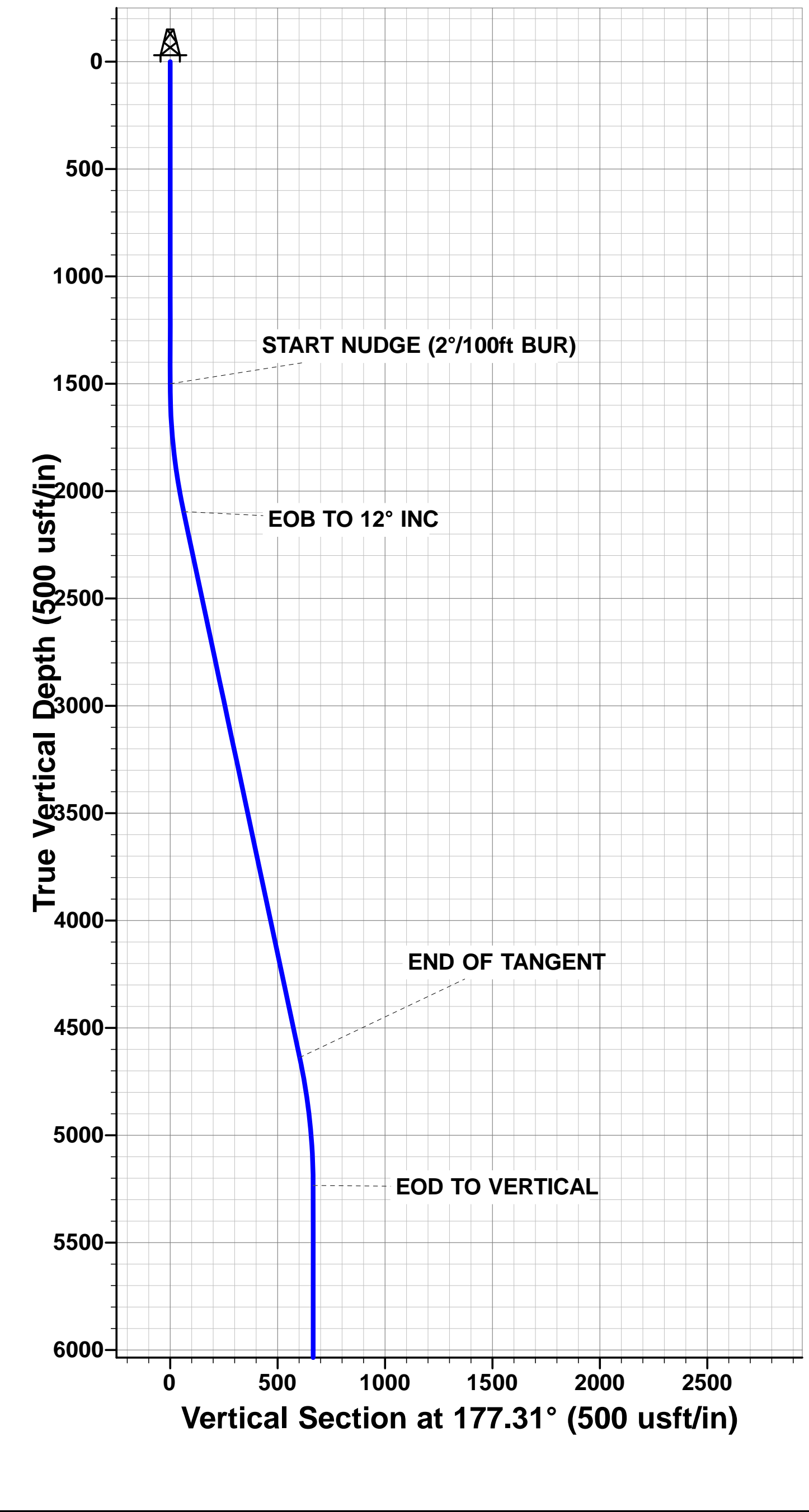




Project: WELD COUNTY, COLORADO
Site: SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)
Well: PAONIA 5N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

ANNOTATIONS										PROPOSED LOCAL COORDINATES: SHL: 2434ft FEL & 685ft FSL of Sec 32 EP: 2405ft FEL & 737ft FSL of Sec 32 BHL: 2405ft FEL & 200ft FNL of Sec 29
TVD	MD	Inc	Azi	+N/-S	+E/-W	VS	CD	Departure	Annotation	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 2434ft FEL & 685ft FSL of Sec 32	
1500.00	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
2095.53	2099.91	12.00	177.31	-62.51	2.94	-62.52	62.58		EOB TO 12° INC	
4638.27	4699.43	12.00	177.31	-602.31	28.34	-602.33	602.97		END OF TANGENT	
5233.80	5299.34	0.00	0.00	-664.82	31.28	-664.84	665.56		EOD TO VERTICAL	
6377.80	6443.34	0.00	0.00	-664.82	31.28	-664.84	665.56		KOP (8°/100ft BUR)	
7094.00	7568.34	90.00	359.79	51.37	28.66	51.35	1381.76		EP: 2405ft FEL & 737ft FSL of Sec 32	
7094.00	17189.96	90.00	359.78	9672.93	-7.17	9672.93	11003.37		BHL: 2405ft FEL & 200ft FNL of Sec 29	

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP: PAONIA 5N	6377.80	-664.82	31.28	40.261728	-104.686313
EP: PAONIA 5N	7094.00	51.37	28.66	40.263694	-104.686322
BHL: PAONIA 5N	7094.00	9672.93	-7.17	40.290105	-104.686450



PDC ENERGY

WELD COUNTY, COLORADO

SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)

PAONIA 5N

ORIGINAL WELLBORE

PROPOSAL #1

Anticollision Report

13 December, 2017



Anticollision Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well PAONIA 5N
Project:	WELD COUNTY, COLORADO	TVD Reference:	WELL @ 4919.00usft (Original Well Elev)
Reference Site:	SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)	MD Reference:	WELL @ 4919.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	PAONIA 5N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #1	Offset TVD Reference:	Offset Datum

Reference	PROPOSAL #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	13/12/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,189.96	PROPOSAL #1 (ORIGINAL WELLBORE)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
SE SE SEC. 32 T4N R65W 6th P.M. (CRAWFORD)						
EXIST DD RAY 39-32 - Wellbore #1 - Wellbore #1	100.00	66.64	2,260.21	2,260.05	10,000.000	CC, ES
EXIST DD RAY 39-32 - Wellbore #1 - Wellbore #1	11,000.00	7,184.39	3,716.03	3,627.57	42.009	SF
EXIST DD SPAYD 39-29 - Wellbore #1 - Wellbore #1	13,435.22	7,127.90	2,360.80	2,229.29	17.951	CC
EXIST DD SPAYD 39-29 - Wellbore #1 - Wellbore #1	13,500.00	7,127.97	2,361.69	2,228.95	17.792	ES
EXIST DD SPAYD 39-29 - Wellbore #1 - Wellbore #1	14,200.00	7,128.64	2,481.59	2,335.54	16.991	SF
EXIST VERT HSR-KOCH 16-32 - Wellbore #1 - Design #	7,278.88	7,008.30	1,739.61	1,707.25	53.751	CC, ES
EXIST VERT HSR-KOCH 16-32 - Wellbore #1 - Design #	10,600.00	7,066.00	3,742.25	3,664.26	47.979	SF
SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)						
ABDN VERT BOHLENDER 2 - Wellbore #1 - Design #1	15,376.95	4,856.00	2,843.60	2,729.58	24.939	CC
ABDN VERT BOHLENDER 2 - Wellbore #1 - Design #1	15,400.00	4,856.00	2,843.69	2,729.37	24.874	ES
ABDN VERT BOHLENDER 2 - Wellbore #1 - Design #1	16,300.00	4,856.00	2,989.66	2,863.54	23.705	SF
ABDN VERT BOHLENDER 31-29 #3 - Wellbore #1 - Des	16,653.16	4,736.00	2,404.40	2,320.77	28.750	CC, ES
ABDN VERT BOHLENDER 31-29 #3 - Wellbore #1 - Des	17,189.96	4,736.00	2,463.60	2,375.63	28.006	SF
ABDN VERT HAMBERT R G 32-4 - Wellbore #1 - Design	11,493.15	7,094.00	2,060.52	1,965.85	21.766	CC
ABDN VERT HAMBERT R G 32-4 - Wellbore #1 - Design	11,500.00	7,094.00	2,060.53	1,965.73	21.737	ES
ABDN VERT HAMBERT R G 32-4 - Wellbore #1 - Design	12,300.00	7,094.00	2,212.85	2,103.01	20.145	SF
ABDN VERT HSR-MAYA 4-29 - Wellbore #1 - Wellbore #	16,021.75	7,000.00	2,012.84	1,846.45	12.097	CC, ES
ABDN VERT HSR-MAYA 4-29 - Wellbore #1 - Wellbore #	16,500.00	7,000.00	2,068.87	1,893.35	11.787	SF
ABDN VERT MUSICK MCCLINTOCK 3 - Wellbore #1 - W	11,445.71	4,521.19	3,388.11	3,327.90	56.272	CC
ABDN VERT MUSICK MCCLINTOCK 3 - Wellbore #1 - W	11,500.00	4,521.19	3,388.55	3,327.61	55.611	ES
ABDN VERT MUSICK MCCLINTOCK 3 - Wellbore #1 - W	14,000.00	4,521.19	4,243.05	4,148.43	44.844	SF
ABDN VERT NGL C3 - Wellbore #1 - Design #1	11,289.69	7,094.00	2,207.23	2,116.37	24.292	CC
ABDN VERT NGL C3 - Wellbore #1 - Design #1	11,300.00	7,094.00	2,207.25	2,116.20	24.241	ES
ABDN VERT NGL C3 - Wellbore #1 - Design #1	12,300.00	7,094.00	2,427.46	2,317.61	22.099	SF
ABDN VERT UPRR 21 PAN AM A#1 - Wellbore #1 - Wel	12,802.29	7,100.00	2,128.44	2,023.24	20.231	CC, ES
ABDN VERT UPRR 21 PAN AM A#1 - Wellbore #1 - Wel	13,600.00	7,100.00	2,273.02	2,152.67	18.888	SF
EXIST DD NGL C3A - Wellbore #1 - Wellbore #1	13,348.42	7,366.92	2,338.27	2,185.25	15.280	CC
EXIST DD NGL C3A - Wellbore #1 - Wellbore #1	13,400.00	7,377.02	2,338.81	2,184.72	15.178	ES
EXIST DD NGL C3A - Wellbore #1 - Wellbore #1	14,100.00	7,650.28	2,443.49	2,274.70	14.477	SF
EXIST DD RAY 23-32 - Wellbore #1 - Wellbore #1	2,411.09	2,420.61	183.25	172.62	17.234	CC
EXIST DD RAY 23-32 - Wellbore #1 - Wellbore #1	7,906.22	7,170.56	200.09	162.71	5.353	ES, SF
EXIST DD RAY 24-32 - Wellbore #1 - Wellbore #1	9,315.81	7,190.62	1,157.46	1,101.26	20.595	CC, ES
EXIST DD RAY 24-32 - Wellbore #1 - Wellbore #1	9,700.00	7,188.52	1,219.56	1,156.65	19.385	SF
EXIST DD RAY 36-32 - Wellbore #1 - Wellbore #1	3,298.05	3,281.28	50.44	36.12	3.521	CC
EXIST DD RAY 36-32 - Wellbore #1 - Wellbore #1	3,300.00	3,283.20	50.44	36.11	3.518	ES

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well PAONIA 5N
Project:	WELD COUNTY, COLORADO	TVD Reference:	WELL @ 4919.00usft (Original Well Elev)
Reference Site:	SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)	MD Reference:	WELL @ 4919.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	PAONIA 5N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #1	Offset TVD Reference:	Offset Datum

Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)						
EXIST DD RAY 36-32 - Wellbore #1 - Wellbore #1	3,400.00	3,381.86	53.62	38.33	3.509	SF
EXIST DD RURAL LAND G32-33D - Wellbore #1 - Wellb	0.00	15.11	2,456.30			
EXIST DD RURAL LAND G32-33D - Wellbore #1 - Wellb	1,200.00	1,191.00	2,458.44	2,453.65	513.439	ES
EXIST DD RURAL LAND G32-33D - Wellbore #1 - Wellb	12,400.00	7,238.00	4,988.75	4,875.13	43.905	SF
EXIST DD SPAYD 19-29 - Wellbore #1 - Wellbore #1	13,393.75	7,505.86	1,503.94	1,349.63	9.746	CC
EXIST DD SPAYD 19-29 - Wellbore #1 - Wellbore #1	13,400.00	7,505.85	1,503.96	1,349.52	9.739	ES
EXIST DD SPAYD 19-29 - Wellbore #1 - Wellbore #1	13,700.00	7,505.10	1,534.81	1,374.68	9.585	SF
EXIST DD SPAYD 20-29 - Wellbore #1 - Wellbore #1	13,459.92	7,063.33	1,033.42	902.66	7.903	CC, ES
EXIST DD SPAYD 20-29 - Wellbore #1 - Wellbore #1	13,600.00	7,059.09	1,042.86	909.48	7.819	SF
EXIST DD SPAYD 22-29 - Wellbore #1 - Wellbore #1	14,482.95	7,096.62	1,252.14	1,100.60	8.262	CC
EXIST DD SPAYD 22-29 - Wellbore #1 - Wellbore #1	14,500.00	7,096.33	1,252.26	1,100.39	8.246	ES
EXIST DD SPAYD 22-29 - Wellbore #1 - Wellbore #1	14,700.00	7,092.84	1,270.81	1,115.13	8.163	SF
EXIST DD SPAYD 23-29 - Wellbore #1 - Wellbore #1	13,494.09	7,350.18	116.25	-18.29	0.864	Level 1, CC, ES, SF
EXIST DD SPAYD 30-29 - Wellbore #1 - Wellbore #1	17,189.96	7,494.15	2,776.49	2,551.63	12.348	CC, ES, SF
EXIST DD SPAYD 33-29 - Wellbore #1 - Wellbore #1	13,427.00	7,582.67	2,748.93	2,593.63	17.701	CC
EXIST DD SPAYD 33-29 - Wellbore #1 - Wellbore #1	13,500.00	7,581.94	2,749.90	2,593.21	17.551	ES
EXIST DD SPAYD 33-29 - Wellbore #1 - Wellbore #1	14,400.00	7,573.07	2,916.02	2,742.22	16.778	SF
EXIST DD SPAYD 36-29 - Wellbore #1 - Wellbore #1	12,139.05	7,489.36	339.60	219.14	2.819	CC, ES, SF
EXIST DD SPAYD 37-29 - Wellbore #1 - Wellbore #1	12,183.15	7,249.56	968.08	850.28	8.218	CC
EXIST DD SPAYD 37-29 - Wellbore #1 - Wellbore #1	12,200.00	7,249.06	968.23	850.11	8.197	ES
EXIST DD SPAYD 37-29 - Wellbore #1 - Wellbore #1	12,300.00	7,246.15	975.10	855.11	8.127	SF
EXIST VERT BOHLENDER 29-13 - Wellbore #1 - Design	15,266.09	7,094.00	612.19	445.98	3.683	CC, ES
EXIST VERT BOHLENDER 29-13 - Wellbore #1 - Design	15,300.00	7,094.00	613.13	446.27	3.675	SF
EXIST VERT BOHLENDER 29-3 - Wellbore #1 - Design	15,181.42	7,091.00	1,828.30	1,663.71	11.108	CC
EXIST VERT BOHLENDER 29-3 - Wellbore #1 - Design	15,200.00	7,091.00	1,828.40	1,663.45	11.085	ES
EXIST VERT BOHLENDER 29-3 - Wellbore #1 - Design	15,600.00	7,091.00	1,875.61	1,703.03	10.868	SF
EXIST VERT BOHLENDER 32-29 #1 - Wellbore #1 - Des	15,440.33	7,094.00	388.81	219.27	2.293	CC, ES, SF
EXIST VERT CLYDE MARSHALL 1 - Wellbore #1 - Desi	1,500.00	1,500.00	1,483.05	1,476.58	229.343	CC, ES
EXIST VERT CLYDE MARSHALL 1 - Wellbore #1 - Desi	11,500.00	4,765.00	3,795.36	3,745.58	76.243	SF
EXIST VERT CPC BOHLENDER 29-1 - Wellbore #1 - De	16,624.70	7,094.00	1,646.73	1,454.56	8.569	CC, ES
EXIST VERT CPC BOHLENDER 29-1 - Wellbore #1 - De	16,900.00	7,094.00	1,669.58	1,472.15	8.457	SF
EXIST VERT CPC BOHLENDER 29-2 - Wellbore #1 - De	16,909.67	7,094.00	459.34	261.72	2.324	CC, ES, SF
EXIST VERT HAMBERT G 32-4X - Wellbore #1 - Design	11,259.43	7,094.00	2,007.55	1,917.25	22.233	CC
EXIST VERT HAMBERT G 32-4X - Wellbore #1 - Design	11,300.00	7,094.00	2,007.96	1,916.91	22.053	ES
EXIST VERT HAMBERT G 32-4X - Wellbore #1 - Design	12,100.00	7,094.00	2,176.42	2,070.35	20.518	SF
EXIST VERT HAMBERT R G 32-1 - Wellbore #1 - Desig	11,486.66	7,094.00	1,644.27	1,549.73	17.391	CC
EXIST VERT HAMBERT R G 32-1 - Wellbore #1 - Desig	11,500.00	7,094.00	1,644.33	1,549.53	17.346	ES
EXIST VERT HAMBERT R G 32-1 - Wellbore #1 - Desig	12,000.00	7,094.00	1,722.54	1,618.36	16.533	SF
EXIST VERT HAMBERT R G 32-2 - Wellbore #1 - Desig	11,309.80	7,094.00	597.50	506.26	6.549	CC, ES
EXIST VERT HAMBERT R G 32-2 - Wellbore #1 - Desig	11,400.00	7,094.00	604.27	511.35	6.503	SF
EXIST VERT HAMBERT R G 32-3 - Wellbore #1 - Desig	11,384.27	7,094.00	816.96	724.34	8.820	CC
EXIST VERT HAMBERT R G 32-3 - Wellbore #1 - Desig	11,400.00	7,094.00	817.12	724.19	8.793	ES
EXIST VERT HAMBERT R G 32-3 - Wellbore #1 - Desig	11,500.00	7,094.00	825.12	730.32	8.704	SF
EXIST VERT HAMBERT R G 32-6 - Wellbore #1 - Desig	10,058.83	7,094.00	989.35	921.18	14.514	CC, ES
EXIST VERT HAMBERT R G 32-6 - Wellbore #1 - Desig	10,300.00	7,094.00	1,018.32	945.77	14.036	SF
EXIST VERT HAMBERT R G 32-7 - Wellbore #1 - Desig	10,031.61	7,094.00	458.86	391.19	6.781	CC, ES
EXIST VERT HAMBERT R G 32-7 - Wellbore #1 - Desig	10,100.00	7,094.00	463.93	395.02	6.733	SF
EXIST VERT HAMBERT R G 32-8 - Wellbore #1 - Desig	10,339.96	7,094.00	1,816.47	1,743.19	24.788	CC
EXIST VERT HAMBERT R G 32-8 - Wellbore #1 - Desig	10,400.00	7,094.00	1,817.46	1,743.08	24.435	ES
EXIST VERT HAMBERT R G 32-8 - Wellbore #1 - Desig	11,200.00	7,094.00	2,009.79	1,920.60	22.535	SF
EXIST VERT HSR-CARTER 11-29 - Wellbore #1 - Desig	13,883.17	7,094.00	746.18	606.33	5.335	CC
EXIST VERT HSR-CARTER 11-29 - Wellbore #1 - Desig	13,900.00	7,094.00	746.37	606.20	5.324	ES

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well PAONIA 5N
Project:	WELD COUNTY, COLORADO	TVD Reference:	WELL @ 4919.00usft (Original Well Elev)
Reference Site:	SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)	MD Reference:	WELL @ 4919.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	PAONIA 5N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #1	Offset TVD Reference:	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)						
EXIST VERT HSR-CARTER 11-29 - Wellbore #1 - Desig	14,000.00	7,094.00	755.27	613.19	5.316	SF
EXIST VERT HSR-CROUSE 5-29 - Wellbore #1 - Design	15,196.63	7,094.00	2,109.98	1,945.10	12.797	CC
EXIST VERT HSR-CROUSE 5-29 - Wellbore #1 - Design	15,200.00	7,094.00	2,109.98	1,945.03	12.792	ES
EXIST VERT HSR-CROUSE 5-29 - Wellbore #1 - Design	15,700.00	7,094.00	2,169.19	1,994.70	12.431	SF
EXIST VERT HSR-DICERSON 14-29A - Wellbore #1 - D	12,758.79	7,094.00	1,099.20	980.69	9.275	CC
EXIST VERT HSR-DICERSON 14-29A - Wellbore #1 - D	12,800.00	7,094.00	1,099.98	980.68	9.220	ES
EXIST VERT HSR-DICERSON 14-29A - Wellbore #1 - D	13,000.00	7,094.00	1,125.36	1,002.27	9.143	SF
EXIST VERT HSR-FRISBIE 16-29A - Wellbore #1 - Desi	12,788.73	7,094.00	1,624.20	1,505.11	13.639	CC
EXIST VERT HSR-FRISBIE 16-29A - Wellbore #1 - Desi	12,800.00	7,094.00	1,624.24	1,504.94	13.615	ES
EXIST VERT HSR-FRISBIE 16-29A - Wellbore #1 - Desi	13,200.00	7,094.00	1,675.46	1,548.58	13.205	SF
EXIST VERT HSR-FROELICH 12-29A - Wellbore #1 - De	13,924.75	7,094.00	2,099.24	1,958.59	14.925	CC
EXIST VERT HSR-FROELICH 12-29A - Wellbore #1 - De	14,000.00	7,094.00	2,100.59	1,958.51	14.784	ES
EXIST VERT HSR-FROELICH 12-29A - Wellbore #1 - De	14,500.00	7,094.00	2,176.63	2,025.03	14.358	SF
EXIST VERT HSR-HARRISON 9-32 - Wellbore #1 - Des	8,827.96	7,094.00	1,863.75	1,816.83	39.722	CC, ES
EXIST VERT HSR-HARRISON 9-32 - Wellbore #1 - Des	10,200.00	7,094.00	2,314.33	2,243.60	32.723	SF
EXIST VERT HSR-MUNDS 13-29 - Wellbore #1 - Design	12,949.48	7,094.00	2,195.33	2,073.20	17.975	CC
EXIST VERT HSR-MUNDS 13-29 - Wellbore #1 - Design	13,000.00	7,094.00	2,195.91	2,072.82	17.840	ES
EXIST VERT HSR-MUNDS 13-29 - Wellbore #1 - Design	13,700.00	7,094.00	2,320.07	2,183.69	17.012	SF
EXIST VERT HSR-NICHOLS 15-32 - Wellbore #1 - Desig	7,827.96	7,094.00	754.44	719.89	21.834	CC, ES
EXIST VERT HSR-NICHOLS 15-32 - Wellbore #1 - Desig	8,000.00	7,094.00	773.81	737.89	21.546	SF
EXIST VERT HSR-RAY 3-29 - Wellbore #1 - Design #1	16,664.03	7,094.00	1,050.32	857.41	5.444	CC
EXIST VERT HSR-RAY 3-29 - Wellbore #1 - Design #1	16,700.00	7,094.00	1,050.94	857.33	5.428	ES
EXIST VERT HSR-RAY 3-29 - Wellbore #1 - Design #1	16,800.00	7,094.00	1,059.09	863.57	5.417	SF
EXIST VERT HSR-SALISBURY 6-29 - Wellbore #1 - Des	15,483.02	7,094.00	1,075.76	905.41	6.315	CC
EXIST VERT HSR-SALISBURY 6-29 - Wellbore #1 - Des	15,500.00	7,094.00	1,075.89	905.22	6.304	ES
EXIST VERT HSR-SALISBURY 6-29 - Wellbore #1 - Des	15,600.00	7,094.00	1,082.10	909.51	6.270	SF
EXIST VERT HSR-TEAGLE 10-29A - Wellbore #1 - Desi	14,216.73	7,094.00	360.23	214.02	2.464	CC, ES, SF
EXIST VERT HSR-WILLIAM 10-32A - Wellbore #1 - Des	8,803.52	7,094.00	464.13	417.60	9.975	CC, ES
EXIST VERT HSR-WILLIAM 10-32A - Wellbore #1 - Des	8,900.00	7,094.00	474.05	425.98	9.862	SF
EXIST VERT HSR-WRIGHT 9-29A - Wellbore #1 - Desig	14,143.49	7,094.00	1,545.19	1,400.38	10.670	CC
EXIST VERT HSR-WRIGHT 9-29A - Wellbore #1 - Desig	14,200.00	7,094.00	1,546.23	1,400.34	10.599	ES
EXIST VERT HSR-WRIGHT 9-29A - Wellbore #1 - Desig	14,500.00	7,094.00	1,585.79	1,434.19	10.460	SF
EXIST VERT MARSHALL 32-11G - Wellbore #1 - Design	8,972.85	7,094.00	898.50	849.25	18.243	CC
EXIST VERT MARSHALL 32-11G - Wellbore #1 - Design	9,000.00	7,094.00	898.91	849.22	18.089	ES
EXIST VERT MARSHALL 32-11G - Wellbore #1 - Design	9,300.00	7,094.00	956.21	901.47	17.469	SF
EXIST VERT MARSHALL 32-12G - Wellbore #1 - Design	8,631.04	7,094.00	2,049.55	2,005.67	46.706	CC, ES
EXIST VERT MARSHALL 32-12G - Wellbore #1 - Design	10,500.00	7,094.00	2,773.73	2,697.51	36.394	SF
EXIST VERT MARSHALL 32-14G - Wellbore #1 - Design	2,186.78	2,180.51	1,097.73	1,088.24	115.679	CC
EXIST VERT MARSHALL 32-14G - Wellbore #1 - Design	2,300.00	2,291.25	1,097.98	1,087.89	108.740	ES
EXIST VERT MARSHALL 32-14G - Wellbore #1 - Design	7,600.00	7,094.00	1,141.73	1,108.38	34.233	SF
EXIST VERT MARSHALL G 32-13JI - Wellbore #1 - Des	1,500.00	1,500.00	2,393.25	2,386.78	370.099	CC
EXIST VERT MARSHALL G 32-13JI - Wellbore #1 - Des	1,700.00	1,699.84	2,393.60	2,386.31	328.709	ES
EXIST VERT MARSHALL G 32-13JI - Wellbore #1 - Des	13,300.00	7,094.00	6,258.98	6,130.20	48.603	SF
EXIST VERT MEL SMOOKLER GAS UNIT 1 - Wellbore	8,110.22	7,094.00	1,894.66	1,857.63	51.168	CC, ES
EXIST VERT MEL SMOOKLER GAS UNIT 1 - Wellbore	10,100.00	7,094.00	2,747.52	2,678.61	39.873	SF
EXIST VERT MUSICK 1-32 - Wellbore #1 - Design #1	10,469.31	7,094.00	1,450.48	1,374.83	19.173	CC
EXIST VERT MUSICK 1-32 - Wellbore #1 - Design #1	10,500.00	7,094.00	1,450.81	1,374.59	19.036	ES
EXIST VERT MUSICK 1-32 - Wellbore #1 - Design #1	11,000.00	7,094.00	1,544.51	1,459.05	18.073	SF
EXIST VERT MUSICK GAS UNIT 1 - Wellbore #1 - Desi	10,488.74	7,094.00	1,173.51	1,097.51	15.440	CC
EXIST VERT MUSICK GAS UNIT 1 - Wellbore #1 - Desi	10,500.00	7,094.00	1,173.57	1,097.35	15.398	ES
EXIST VERT MUSICK GAS UNIT 1 - Wellbore #1 - Desi	10,800.00	7,094.00	1,214.09	1,132.34	14.851	SF
EXIST VERT MUSICK MCCLINTOCK 2 - Wellbore #1 - D	10,170.40	4,755.00	2,447.70	2,413.54	71.668	CC

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well PAONIA 5N
Project:	WELD COUNTY, COLORADO	TVD Reference:	WELL @ 4919.00usft (Original Well Elev)
Reference Site:	SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)	MD Reference:	WELL @ 4919.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	PAONIA 5N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #1	Offset TVD Reference:	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)						
EXIST VERT MUSICK MCCLINTOCK 2 - Wellbore #1 - D	10,200.00	4,755.00	2,447.88	2,413.47	71.148	ES
EXIST VERT MUSICK MCCLINTOCK 2 - Wellbore #1 - D	11,700.00	4,755.00	2,886.33	2,838.89	60.854	SF
EXIST VERT MUSICK MCCLINTOCK 4 - Wellbore #1 - D	10,022.01	4,750.00	2,890.87	2,847.49	66.642	CC, ES
EXIST VERT MUSICK MCCLINTOCK 4 - Wellbore #1 - D	12,500.00	4,750.00	3,807.58	3,733.69	51.532	SF
EXIST VERT MUSICK MCCLINTOCK 6 - Wellbore #1 - D	10,276.06	4,750.00	3,073.04	3,024.10	62.795	CC
EXIST VERT MUSICK MCCLINTOCK 6 - Wellbore #1 - D	10,300.00	4,750.00	3,073.13	3,023.89	62.402	ES
EXIST VERT MUSICK MCCLINTOCK 6 - Wellbore #1 - D	12,900.00	4,750.00	4,040.85	3,957.16	48.286	SF
EXIST VERT MUSICK MCCLINTOCK 7 - Wellbore #1 - D	10,042.77	4,739.00	2,429.02	2,397.03	75.928	CC, ES
EXIST VERT MUSICK MCCLINTOCK 7 - Wellbore #1 - D	11,600.00	4,739.00	2,885.33	2,840.55	64.424	SF
EXIST VERT MUSICK MCCLINTOCK 1 - Wellbore #1 - D	11,436.91	4,803.00	2,346.55	2,304.03	55.182	CC, ES
EXIST VERT MUSICK-MCCLINTOCK 1 - Wellbore #1 - D	12,500.00	4,803.00	2,576.13	2,524.99	50.371	SF
EXIST VERT MUSICK-MCCLINTOCK 5 - Wellbore #1 - D	11,498.28	4,752.00	2,548.92	2,498.65	50.699	CC
EXIST VERT MUSICK-MCCLINTOCK 5 - Wellbore #1 - D	11,500.00	4,752.00	2,548.92	2,498.63	50.682	ES
EXIST VERT MUSICK-MCCLINTOCK 5 - Wellbore #1 - D	12,800.00	4,752.00	2,862.07	2,798.88	45.288	SF
EXIST VERT NGL C3B - Wellbore #1 - Design #1	16,328.00	7,094.00	2,086.42	1,899.93	11.188	CC
EXIST VERT NGL C3B - Wellbore #1 - Design #1	16,400.00	7,094.00	2,087.66	1,899.79	11.112	ES
EXIST VERT NGL C3B - Wellbore #1 - Design #1	16,800.00	7,094.00	2,139.15	1,943.63	10.941	SF
EXIST VERT R G 32-5 - Wellbore #1 - Design #1	10,096.48	7,094.00	2,284.02	2,215.18	33.177	CC
EXIST VERT R G 32-5 - Wellbore #1 - Design #1	10,100.00	7,094.00	2,284.03	2,215.12	33.146	ES
EXIST VERT R G 32-5 - Wellbore #1 - Design #1	11,500.00	7,094.00	2,680.78	2,585.98	28.280	SF
EXIST VERT SPAYD 5-29 - Wellbore #1 - Design #1	15,572.52	7,094.00	2,371.90	2,199.84	13.785	CC
EXIST VERT SPAYD 5-29 - Wellbore #1 - Design #1	15,600.00	7,094.00	2,372.06	2,199.48	13.744	ES
EXIST VERT SPAYD 5-29 - Wellbore #1 - Design #1	16,200.00	7,094.00	2,453.50	2,269.45	13.331	SF
EXIST VERT UPRR 21 PAN AM D #1 - Wellbore #1 - De	14,044.10	4,730.00	2,534.17	2,461.28	34.767	CC, ES
EXIST VERT UPRR 21 PAN AM D #1 - Wellbore #1 - De	14,900.00	4,730.00	2,674.81	2,593.67	32.968	SF
EXIST VERT UPRR 21 PAN AM D #2 - Wellbore #1 - De	12,748.12	7,094.00	1,771.93	1,653.62	14.976	CC
EXIST VERT UPRR 21 PAN AM D #2 - Wellbore #1 - De	12,800.00	7,094.00	1,772.69	1,653.39	14.859	ES
EXIST VERT UPRR 21 PAN AM D #2 - Wellbore #1 - De	13,300.00	7,094.00	1,855.89	1,727.11	14.412	SF
EXIST VERT UPRR 21 PAN AM G #1 - Wellbore #1 - De	16,032.63	4,660.00	2,917.46	2,803.87	25.683	CC
EXIST VERT UPRR 21 PAN AM G #1 - Wellbore #1 - De	16,100.00	4,660.00	2,918.24	2,803.82	25.506	ES
EXIST VERT UPRR 21 PAN AM G #1 - Wellbore #1 - De	16,900.00	4,660.00	3,043.66	2,919.53	24.518	SF
EXIST VERT UPRR PAN AM "J"1 - Wellbore #1 - Design	12,848.36	7,094.00	273.94	153.72	2.279	CC, ES, SF
EXIST VERT VERN MARSHALL 1 - Wellbore #1 - Desig	1,500.00	1,500.00	2,535.72	2,529.26	392.131	CC, ES
EXIST VERT VERN MARSHALL 1 - Wellbore #1 - Desig	13,500.00	4,785.00	5,594.10	5,498.78	58.690	SF
EXIST VERT WEINMASTER G 32-18 - Wellbore #1 - De	10,722.10	7,094.00	71.59	-8.72	0.891	Level 1, CC, ES, SF
PAONIA 10N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	300.00	75.01	73.94	69.964	CC, ES
PAONIA 10N - ORIGINAL WELLBORE - PROPOSAL #1	17,189.96	17,485.42	1,567.28	1,192.47	4.182	SF
PAONIA 11N - ORIGINAL WELLBORE - PROPOSAL #1	200.00	200.00	90.02	89.40	144.586	CC
PAONIA 11N - ORIGINAL WELLBORE - PROPOSAL #1	300.00	299.35	90.37	89.32	85.378	ES
PAONIA 11N - ORIGINAL WELLBORE - PROPOSAL #1	17,189.96	17,517.70	1,934.61	1,555.78	5.107	SF
PAONIA 12N - ORIGINAL WELLBORE - PROPOSAL #1	100.00	100.00	104.99	104.82	606.648	CC
PAONIA 12N - ORIGINAL WELLBORE - PROPOSAL #1	200.00	199.10	105.41	104.80	171.483	ES
PAONIA 12N - ORIGINAL WELLBORE - PROPOSAL #1	17,189.96	17,705.09	2,286.30	1,907.40	6.034	SF
PAONIA 1N - ORIGINAL WELLBORE - PROPOSAL #1	1,500.00	1,500.00	59.97	53.51	9.274	CC, ES
PAONIA 1N - ORIGINAL WELLBORE - PROPOSAL #1	17,189.96	17,446.39	1,364.05	991.26	3.659	SF
PAONIA 2N - ORIGINAL WELLBORE - PROPOSAL #1	1,500.00	1,500.00	44.99	38.53	6.958	CC, ES
PAONIA 2N - ORIGINAL WELLBORE - PROPOSAL #1	17,189.96	17,319.01	1,024.04	653.57	2.764	SF
PAONIA 3N - ORIGINAL WELLBORE - PROPOSAL #1	1,500.00	1,500.00	29.98	23.52	4.637	CC, ES
PAONIA 3N - ORIGINAL WELLBORE - PROPOSAL #1	17,189.96	17,224.16	604.21	230.54	1.617	SF
PAONIA 4N - ORIGINAL WELLBORE - PROPOSAL #1	1,500.00	1,500.00	14.97	8.51	2.315	CC
PAONIA 4N - ORIGINAL WELLBORE - PROPOSAL #1	15,500.00	15,600.00	219.03	-62.68	0.778	Level 1, SF
PAONIA 4N - ORIGINAL WELLBORE - PROPOSAL #1	15,700.00	15,797.18	226.40	-63.63	0.781	Level 1, ES

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PDC ENERGY	Local Co-ordinate Reference:	Well PAONIA 5N
Project:	WELD COUNTY, COLORADO	TVD Reference:	WELL @ 4919.00usft (Original Well Elev)
Reference Site:	SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)	MD Reference:	WELL @ 4919.00usft (Original Well Elev)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	PAONIA 5N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #1	Offset TVD Reference:	Offset Datum

Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
SW SE SEC. 32 T4N R65W 6th P.M. (PAONIA)						
PAONIA 6N - ORIGINAL WELLBORE - PROPOSAL #1	1,200.00	1,200.00	15.01	9.89	2.933	CC
PAONIA 6N - ORIGINAL WELLBORE - PROPOSAL #1	17,189.96	17,288.79	311.24	-50.78	0.860	Level 1, ES, SF
PAONIA 7N - ORIGINAL WELLBORE - PROPOSAL #1	1,000.00	1,000.00	30.02	25.80	7.115	CC, ES
PAONIA 7N - ORIGINAL WELLBORE - PROPOSAL #1	17,189.96	17,222.21	644.88	268.26	1.712	SF
PAONIA 8N - ORIGINAL WELLBORE - PROPOSAL #1	900.00	900.00	45.03	41.26	11.946	CC, ES
PAONIA 8N - ORIGINAL WELLBORE - PROPOSAL #1	17,189.96	17,346.82	919.23	544.07	2.450	SF
PAONIA 9N - ORIGINAL WELLBORE - PROPOSAL #1	400.00	400.00	60.00	58.48	39.431	CC, ES
PAONIA 9N - ORIGINAL WELLBORE - PROPOSAL #1	17,189.96	17,317.59	1,249.76	872.08	3.309	SF

Offset Design SE SE SEC. 32 T4N R65W 6th P.M. (CRAWFORD) - EXIST DD RAY 39-32 - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 usft
Survey Program: 686-MWD												Offset Well Error:	0.00 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	56.13	1,259.54	1,876.63	2,260.30				
100.00	100.00	66.64	66.64	0.09	0.07	56.13	1,259.61	1,876.67	2,260.21	2,260.05	0.16	N/A	CC, ES
200.00	200.00	159.18	159.18	0.31	0.18	56.13	1,259.93	1,876.90	2,260.61	2,260.13	0.49	4,645.003	
300.00	300.00	251.73	251.72	0.54	0.28	56.12	1,260.53	1,877.32	2,261.34	2,260.53	0.81	2,780.116	
400.00	400.00	344.26	344.25	0.76	0.38	56.11	1,261.39	1,877.93	2,262.41	2,261.27	1.14	1,984.366	
500.00	500.00	436.79	436.77	0.99	0.49	56.10	1,262.52	1,878.72	2,263.80	2,262.33	1.47	1,543.335	
600.00	600.00	529.31	529.27	1.21	0.59	56.08	1,263.91	1,879.70	2,265.52	2,263.72	1.79	1,263.172	
700.00	700.00	621.81	621.76	1.44	0.69	56.06	1,265.58	1,880.87	2,267.57	2,265.45	2.12	1,069.510	
800.00	800.00	718.61	718.52	1.66	0.83	56.04	1,267.58	1,882.27	2,269.92	2,267.44	2.48	914.603	
900.00	900.00	825.17	825.05	1.88	1.05	56.02	1,269.74	1,883.65	2,272.13	2,269.21	2.92	777.356	
1,000.00	1,000.00	930.07	929.93	2.11	1.27	55.99	1,271.72	1,884.76	2,274.06	2,270.70	3.36	676.907	
1,100.00	1,100.00	1,029.47	1,029.31	2.33	1.47	55.97	1,273.36	1,885.88	2,275.92	2,272.14	3.78	601.870	
1,200.00	1,200.00	1,132.69	1,132.51	2.56	1.68	55.96	1,274.79	1,887.24	2,277.79	2,273.57	4.21	540.629	
1,300.00	1,300.00	1,238.51	1,238.32	2.78	1.90	55.95	1,276.13	1,888.31	2,279.33	2,274.68	4.66	489.542	
1,400.00	1,400.00	1,360.38	1,360.17	3.01	2.15	55.94	1,277.22	1,889.24	2,280.50	2,275.37	5.13	444.252	
1,500.00	1,500.00	1,458.21	1,457.96	3.23	2.35	56.01	1,275.23	1,891.19	2,281.01	2,275.46	5.56	410.424	
1,600.00	1,599.98	1,547.75	1,547.34	3.43	2.54	-121.17	1,271.52	1,894.71	2,282.85	2,276.91	5.94	384.402	
1,700.00	1,699.84	1,687.55	1,686.50	3.60	2.84	-120.95	1,260.67	1,902.34	2,285.78	2,279.36	6.42	355.990	
1,800.00	1,799.45	1,814.29	1,811.89	3.79	3.16	-120.67	1,244.55	1,911.12	2,288.96	2,282.05	6.91	331.110	
1,900.00	1,898.70	1,883.56	1,880.11	3.98	3.34	-120.46	1,234.12	1,917.06	2,294.07	2,286.77	7.30	314.426	
2,000.00	1,997.47	1,964.30	1,959.48	4.21	3.59	-120.23	1,221.85	1,925.30	2,302.19	2,294.44	7.75	297.069	
2,099.91	2,095.53	2,050.05	2,043.27	4.47	3.88	-119.94	1,206.94	1,935.79	2,312.57	2,304.29	8.28	279.392	
2,200.00	2,193.44	2,149.83	2,140.28	4.77	4.26	-119.81	1,188.17	1,949.61	2,324.43	2,315.50	8.93	260.238	
2,300.00	2,291.25	2,300.21	2,285.85	5.09	4.86	-119.54	1,156.60	1,970.26	2,335.04	2,325.22	9.82	237.671	
2,400.00	2,389.07	2,409.91	2,392.11	5.43	5.30	-119.35	1,132.93	1,983.78	2,344.15	2,333.58	10.57	221.739	
2,500.00	2,486.88	2,498.04	2,477.31	5.78	5.68	-119.19	1,113.45	1,995.05	2,353.39	2,342.11	11.28	208.626	
2,600.00	2,584.70	2,584.88	2,561.23	6.15	6.07	-119.03	1,094.36	2,006.73	2,363.27	2,351.26	12.01	196.839	
2,700.00	2,682.52	2,703.64	2,675.92	6.53	6.61	-118.80	1,067.84	2,022.41	2,372.76	2,359.87	12.90	183.985	
2,800.00	2,780.33	2,799.11	2,767.70	6.93	7.07	-118.58	1,045.16	2,035.65	2,382.12	2,368.40	13.72	173.602	
2,900.00	2,878.15	2,893.90	2,858.78	7.32	7.53	-118.36	1,022.53	2,049.06	2,391.70	2,377.15	14.54	164.458	
3,000.00	2,975.96	2,987.70	2,948.94	7.73	7.97	-118.14	1,000.38	2,062.37	2,401.48	2,386.12	15.36	156.394	
3,100.00	3,073.78	3,088.97	3,046.47	8.14	8.44	-117.93	977.12	2,076.60	2,411.51	2,395.30	16.21	148.778	
3,200.00	3,171.59	3,178.72	3,133.27	8.56	8.87	-117.77	957.53	2,088.32	2,421.34	2,404.32	17.02	142.285	
3,300.00	3,269.41	3,253.38	3,205.17	8.98	9.23	-117.62	940.72	2,099.37	2,432.26	2,414.48	17.77	136.843	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation